

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
25 March 2004 (25.03.2004)

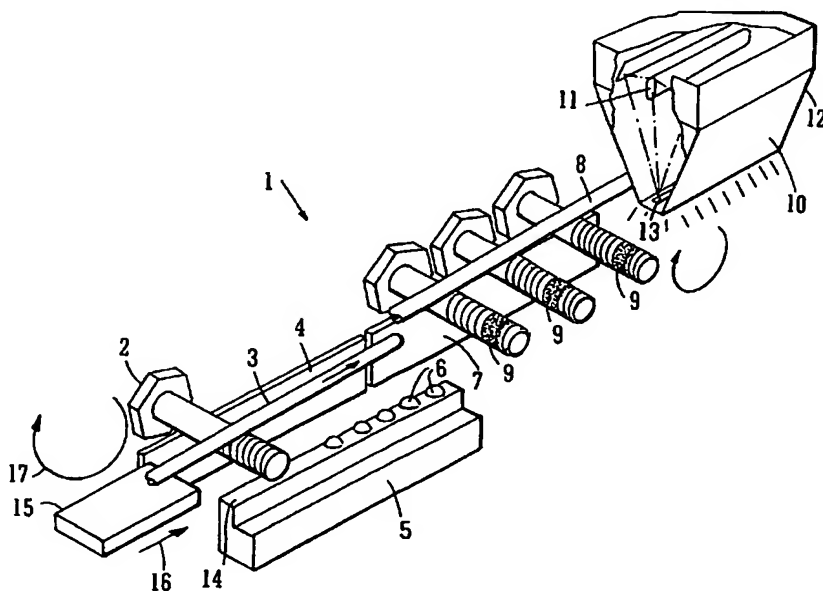
PCT

(10) International Publication Number
WO 2004/024841 A2

- (51) International Patent Classification⁷: **C09J 4/00**
- (21) International Application Number:
PCT/IE2003/000122
- (22) International Filing Date:
11 September 2003 (11.09.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
2002/0739 11 September 2002 (11.09.2002) IE
- (71) Applicants (*for all designated States except US*):
HENKEL LOCTITE DEUTSCHLAND GMBH [DE/DE]; Arabellastrasse 17, 81925 München (DE).
LOCTITE (R & D) LIMITED [IE/IE]; Tallaght Business Park, Whitestown, Dublin 24 (IE).
- (72) Inventors; and
(75) Inventors/Applicants (*for US only*): **HALLER, Matthias** [DE/DE]; Wiesenfeldstrasse 11, 65936 Frankfurt (DE).
FITZPATRICK, Martin, Justin [IE/IE]; 13 Church Park Court, Dublin 6W (IE). **GORDON, Fergal, Anthony** [IE/IE]; 10 The Paddocks, Naas, County Kildare (IE).
O'FLYNN, Karen [IE/IE]; 42 Foxborough Avenue, Lucan, County Dublin (IE). **WROBEL, Peter** [GB/IE]; 4 Templeroan Crescent, Templeogue, Dublin 16 (IE).
- (74) Agents: **LANE, Cathal, Michael et al.**; Tomkins & Co., 5 Dartmouth Road, Dublin 6 (IE).
- (81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,

[Continued on next page]

(54) Title: AN APPARATUS FOR THE APPLICATION OF A CURABLE COMPOSITION TO A FASTENER AND CURABLE COMPOSITIONS SUITABLE FOR APPLICATION TO A FASTENER



(57) Abstract: An apparatus (1) for the application of a composition curable by irradiation to a fastener (2) having a conveyor (3) for conveying fasteners to an application station (5); an application station (10) comprising an applicator from which the composition is dispensed. The conveyor rotates the fasteners past the applicator for application of composition. The same or another conveyor (8) conveys the fasteners to an irradiation station (11) and rotates the fasteners for irradiation thereof. The irradiation station irradiates and thus cures the composition applied to each fastener. The invention also provides a curable composition for application to a threaded article, comprising a dispersion of: (i) components of a first cure mechanism comprising: (a) a (meth)acrylate functional

monomer component; (b) a (meth)acrylate functional oligomer component; and (c) a photoinitiator component; (ii) components of a second cure mechanism comprising: (e) an amine component; and (f) an encapsulated epoxy resin component; together with (iii) a thickener component suitable to impart sufficient viscosity to the uncured composition to maintain the dispersion of the other components in the composition; wherein the photoinitiator component is suitable upon irradiation of the composition to achieve a first cure through the depth of the composition applied to a threaded article so that a binder matrix is formed with the components of the second cure mechanism dispersed through the matrix.